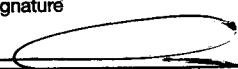


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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

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**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

Peter Rice, P. E.  
Deputy Director of Public Works  
City of Portsmouth  
680 Peverly Hill Road  
Portsmouth, NH 03801

Re: City of Portsmouth, New Hampshire  
NPDES Permit No. NH0100234  
Consent Decree Docket No. 09-cv-283-PB  
*Wastewater Master Plan Phase 2 Initial Piloting Technical Memorandum*,  
2 Volumes, prepared by AECOM, dated September 27, 2012

Dear Mr. Rice:

Thank you for presenting an overview of the *Wastewater Master Plan Phase 2 Initial Piloting Technical Memorandum* ("Phase 2 Study") and for providing an opportunity to ask questions at the technical meeting held in Portsmouth on December 18, 2012. Following the technical meeting with the City and its consultants, EPA and the New Hampshire Department of Environmental Services ("NHDES") reviewed the study again and the Agencies' questions and comments are given below.

General Comments:

EPA and NHDES continue to question whether the size of the secondary treatment system as proposed in Portsmouth's Phase 2 Study is adequate to treat all dry-weather and an appropriate portion of wet-weather flows (i.e., infiltration and inflow ("I/I")) in accordance with widely-accepted wastewater treatment facility ("WWTF") design standards (e.g. TR-16 Guides for the Design of Wastewater Treatment Works). Specifically, Portsmouth recommends sizing the Peirce Island secondary treatment system to treat an annual average flow of 6.13 million gallons per day ("MGD"), a maximum monthly flow of 8.86 MGD, and a maximum daily flow of 9.06 MGD. Hence, the secondary WWTF would be sized to treat the largest recorded dry-weather daily flow including 20-year growth projections plus a limited amount of I/I. Flows exceeding the design would bypass secondary treatment and receive chemically-enhanced primary

treatment ("CEPT") and disinfection prior to discharge to the Piscataqua River. Portsmouth's plot of the *January 2008 through June 2012 Flow and Precipitation Data (at Max Day Flow of 9.06 MGD)* shows that flows would bypass secondary treatment for one to two consecutive weeks during spring and fall seasons, and would often bypass secondary treatment for several days after the end of a storm.

Specific Comments and Questions:

Please respond to the Agencies' questions and comments listed below **within 30 days of receipt of this letter.**

1. Attachment C of Phase 2 Study Revised Wastewater Flow and Loading Study, prepared by AECOM, August 27, 2012

Despite the fact that Portsmouth owns and operates a combined sewer system ("CSS"), the Phase 2 Study indicates that the design concept is to *size Portsmouth's Peirce Island secondary treatment system upgrade to treat flows up to the largest dry weather daily flow recorded from January 1, 2008 through June 30, 2012, 7.73 million gallons per day ("MGD"), plus additional flows to accommodate 20-year projected growth.* The Phase 2 Study recommends that the secondary treatment system average annual, secondary treatment maximum month, and secondary treatment maximum day design flow rates should be 6.13 MGD, 8.86 MGD, and 9.06 MGD, respectively. AECOM advises that secondary treatment bypasses would occur during wet-weather when the capacity of the secondary treatment system was exceeded, and that the bypass flows would receive CEPT and disinfection before blending with secondary treatment system effluent ("blended effluent") and discharge.

- a. During wet weather, the blended effluent must fully comply with all of the effluent limitations contained in the City's 2007 NPDES permit as well as a monthly average total nitrogen limit of 8 mg/l. The Phase 2 Study should provide discussion and supporting mass balance calculations demonstrating whether partitioned CEPT and secondary treatment flows and removal efficiencies will consistently result in discharges that are in full compliance with NPDES effluent limitations.
- b. DES' initial Data Set review suggests that secondary treatment bypasses would have occurred on 238 days (14.5%) of the 1,643 days of record, with durations lasting as long as 19 consecutive days. Please review the Peirce Island WWTF flow and precipitation data from January 1, 2008 through June 30, 2012 ("Data Set") and provide the number of days of secondary bypass that would have occurred, the greatest number of *consecutive* days of secondary

bypass that would have occurred, and volumes associated with secondary treatment bypasses of flows greater than 9.06 MGD.

- c. Please review the 4.5 year Data Set and compare the precipitation record to the long-term precipitation record for Portsmouth, and to a typical year precipitation pattern.
  - d. Please provide projections of the effects of the sewer separation program on reducing the annual average flow to the Peirce Island WWTF.
2. As part of the Phase 2 Study, AECOM reviewed the 4.5 year Data Set and assessed the Peirce Island WWTF's response to wet weather events and to snowmelt conditions. AECOM then "parsed" the Data Set into dry and wet weather flow days (see Table 2 of Attachment C). AECOM defined wet-weather flow days based on the size of the precipitation event, and included any day with snowpack and temperatures above 32 degrees Fahrenheit. AECOM noted that WWTF influent flows may be elevated for up to 12 days following a rain event.

EPA's 1994 Combined Sewer Overflow ("CSO") Policy defines a CSO as the discharge from a CSS at a point prior to the publicly owned treatment works ("POTW") treatment plant, and among other things, requires municipalities that own and operate a CSS to implement the technology-based nine minimum controls ("NMCs") and develop and implement a long-term CSO control plan to achieve NPDES Permit and CWA compliance. One of the NMCs is the "maximization of flow to the POTW for treatment."

The CSO Policy does not alter regulatory requirements for permits. Pursuant to 40 C.F.R. Part 122.41(m)(4), bypass, including CSO-related bypass, is prohibited and is subject to enforcement unless there are *no feasible alternatives to the bypass*, the record shows that the secondary treatment system was properly operated and maintained, *that the system has been designed to meet secondary limits for flow greater than the peak dry weather flow plus an appropriate quantity of wet weather flow, and that it is either technically or financially infeasible to provide secondary treatment for greater amounts of wet weather flow.*

Based on the information presented in the Phase 2 Study, the Agencies continue to be concerned that the Peirce Island secondary treatment system upgrade is not being adequately sized to treat peak dry weather flows plus an appropriate quantity of wet weather flow, and that the peaking factor is not consistent with TR16 guidance for an appropriate ratio of maximum design flow to average flow.

- a. In parsing the City's 4.5 year Data Set, AECOM included all days with measured precipitation of .05 inches or greater in its "wet weather" classification. The Agencies assert that rainfall days included in the *lowest* wet tier of the Data Set (the .05-.40 inch class) hardly constitute significant wet weather events, as they appear to result in no apparent (or only slight) flow increases to the WWTF; hence, those days should not be included in the parsed wet weather data set.

A minimum rainfall event of 0.4 inches appears to represent a more appropriate wet weather *floor* value for this evaluation. EPA and DES request that the City and AECOM re-parse the 4.5 year Data Set to delete the .05-.40 inch precipitation class, and then re-compute the Peirce Island WWTF dry weather average daily flow ("ADF"). This recalculation may affect a different dry weather ADF value, and also illustrate the ADF calculation's sensitivity to wet weather classification assumptions.

- b. What is the largest secondary treatment system that could be constructed on Peirce Island, and how many secondary bypass events would occur annually if the City built such a plant?
- c. Page 1-2. Please clarify for the Agencies, what other options the City is considering regarding the upgrade of the WWTF which may further modify the findings of the Phase 2 Study.

3. Please make the following edits and revisions to Volume 2, Chapter 4 (Summary) of the Phase 2 Study:

- a. On Page 362, revise Line 15 to state that field COD measurements were greater than 275 mg/l, not % as cited.
- b. On Page 363, the Section 5 discussion references a boxplot for lab and field TSS from each process. This boxplot should be identified as Figure 4.1-01, not 4.1-02 as cited.
- c. On Page 364, the boxplot of Effluent TSS Lab Results should read Figure 4.1-01, not 4.1.02 as cited, and the spelling of boxplot should be corrected. In addition, this figure appears a second time on the following page.
- d. On Page 365, the Section 6 discussion states "The results [for effluent BOD comparison] are provided below." No such BOD boxplot is provided, and should be inserted as Figure 4.1-02.

- e. On Page 366, the discussion entitled "Comparison of Effluent TN" should read Section 7, not 6 as cited. Subsequent sections are similarly mis-numbered.
- 4. During the December 2012 meeting, Portsmouth explained that: I/I removal would continue with sewer separation projects construction as required by the Consent Decree ("CD") to further reduce flows; the City was initiating a private I/I removal program to focus on replacing leaky, private service laterals and removing sump pumps and roof drains from the City's sewers and redirecting storm flows to storm drains; and there is significant inflow into portions of the City's separate sewer system that must also be addressed in the future to reduce the WWTF influent flows. Please provide more detail to the Agencies regarding these three I/I removal programs and the projected WWTF influent flow reduction.
- 5. Portsmouth's October 30, 2012 quarterly progress report on projects required by the CD
  - a. Portsmouth linked achieving the negotiated compliance schedule deadlines for secondary plant upgrade design, construction and achieving full NPDES Permit compliance to final reissuance of the new NPDES Permit. EPA's July 31, 2012 letter to the City advised that the draft permit would contain a total nitrogen monthly average limit of 8 mg/l and that future permits may include a total nitrogen monthly average limit of 3 mg/l. Portsmouth has a continuing obligation to comply with its current permit and has sufficient information about likely future limits to design and construct necessary secondary treatment facilities without delay.
  - b. Portsmouth reported that it was continuing to investigate why the CEPT facility was violating the interim effluent limits for biochemical oxygen demand ("BOD") contained in Appendix C of the CD. Portsmouth has also noted that due to its on-going sewer separation efforts the strength of the soluble fraction of BOD in the CEPT influent has increased and that the secondary treatment upgrade will remove soluble BOD. Each violation of the interim effluent limit is significant non-compliance and must be addressed expeditiously with updates included in the quarterly CD progress reports.
  - c. Portsmouth advised that its 2010 Post Construction Monitoring Plan ("PCMP") implementation schedule would be updated to reflect the negotiated CSO sewer separation projects schedule of the CD modification. The CD requires Portsmouth's PCMP to assess progress made towards meeting the goal of the 2010 LTCP update and the Clean Water Act and 1994 CSO Policy and federal and

state regulations and permits, and where problems are identified, the City must submit a supplement Corrective Action Plan within 60 days, submitting two progress reports per year from July 1, 2014 onward including data collected. Please clarify this in PCMP updates.

If you have any questions or comments, please feel free to call Joy Hilton at (617) 918-1877 or have your attorney contact Michael Wagner at (617) 918-1735.

Sincerely,

A handwritten signature in black ink, appearing to read "Denny Dart", written in a cursive style.

Denny Dart, Manager  
Water Technical Unit

cc: Tracy Wood, NHDES  
Steve Roberts, NHDES  
Stergios Spanos, NHDES  
Brian Pitt, EPA-OEP  
Michael Cobb, EPA-OEP  
Terry Desmarais, City Engineer, Portsmouth, NH  
Tom Irwin, CLF